KIPDA
Kentuckiana Regional Planning & Development Agency

DRAFT

Amendment 3
to the
Fiscal Year 2025 - 2028
Transportation Improvement Program (TIP)

Amendment 12
to
Connecting Kentuckiana 2050
Metropolitan Transportation Plan (MTP)

Anticipated TPC Approval for January 22, 2026

Please note - Amendment 3 and 12 are a single list of updates with two different reference numbers. The TIP numbering scheme restarted with the FY25-FY28 TIP adoption and the MTP numbering scheme will not restart until a new MTP is adopted.

KIPDA

AMENDMENT SCHEDULE

Amendment 3 to the *Fiscal Year (FY) 2025 - 2028 Transportation Improvement Program* (TIP) Amendment 12 to *Connecting Kentuckiana 2050 Metropolitan Transportation Plan* (MTP)

WHY ARE THERE AMENDMENTS TO THE MTP & TIP?

New projects that are not regionally significant and qualify as Group Projects, as well as many minor changes to existing projects, can be added through an administrative modification. Administrative modifications can be processed within 30 days.

New projects and project changes that do not fit the criteria above must be added to the MTP and/or TIP through an amendment. There are many reasons why a project must be amended. Adding a regionally significant project that does not fit KIPDA's Group Projects policy or changing the scope of a roadway project to add a travel lane are both examples of projects that must be amended. While every effort is made to expedite amendments, the process can take up to 6 months.

KEY STEPS & TIMING

Project applications (new or modified) are due from sponsors	November 7, 2025
KIPDA staff completes project review	November 21, 2025
Air quality conformity activities	November 24, 2025 - December 22, 2025
Interagency Consultation Group (IAC) Coordination	December 15, 2025
Public comment period	December 29, 2025 - January 12, 2026
Comments sent to the Transportation Policy Committee (TPC)	January 13, 2026
Transportation Technical Coordinating Committee (TTCC) Recommendation	January 14, 2026
TPC Action	January 22, 2026
Federal Review begins	January 23, 2026

ADDITIONAL INFORMATION

Amendment 3 to the TIP and Amendment 12 to the MTP are identical lists of project updates. TIP amendment numbering restarted with the adoption of the FY25-FY28 TIP. MTP amendment numbering will continue until a new MTP is adopted.

All new projects and changes to existing projects must be submitted through the Project Application form found on KIPDA's Transportation Planning Portal.

The Portal can be accessed at the following address: https://kipdatransportation.org/forms/

MTP Action:	Update status and add to modeling scenarios				
TIP Action:	None				
Exempt/Non Exempt:	~~Exempt~~ Non-exempt		**Model Impact:**	Add to 2030, 2035, 2040 and 2050 scenarios	
Project Sponsor:	Indiana Department of Transportation (INDOT)	**KIPDA ID:**	2964	**State ID:**	2100048
County:	Clark	**Parent ID:**	N/A	**Group ID:**	N/A
Project Name:	SR 60 Intersection Improvement, Roundabout	**Funding Source:**	NHPP	**Open to Public Date:**	~~2026~~ 2030
Total Estimated Project Cost:	$6,566,843		**Total Cost Programmed in TIP to date:**	$6,566,843	
Description:	Intersection improvement going to a roundabout at SR 60 and CR 311.				
Justification:	The purpose of this project is to reduce the number of traffic crashes being experienced at this location, in particular the rear end, left turn, and right-angle crashes. Using HAT 3 as the analysis tool the 129 crashes resulted in a 4.01 Icc crash severity value. The crash frequency value (Icf) is 6.68. The need for this project is to provide a geometric improvement to the intersection which will provide sufficient capacity and reduce these rear end, left turn and right angle crashes going forward to allow this intersection to operate at a more acceptable overall safety operating condition.				
FY 23-26 TIP Funding:	FY 2025 PE phase with NHPP funds: $85,338 (Federal) + $9,482 (Other) $94,820 (Total) ~~FY 2026 Utilities (U) phase with NHPP funds:~~ ~~$90,000 (Federal) + $10,000 (Other) $100,000 (Total)~~ FY 2030 Right of Way (ROW) phase with NHPP funds: $90,000 (Federal) + $10,000 (Other) $100,000 (Total) ~~FY 2026 Construction (CN) phase with NHPP funds:~~ ~~$4,317,155 (Federal) + $479,684 (Other) $4,796,839 (Total)~~ FY 2030 Construction (CN) phase with NHPP funds: $4,317,155 (Federal) + $479,684 (Other) $4,796,839 (Total)				

MTP Action:	Remove project				
TIP Action:	Remove unused programmed funds				
Exempt/Non Exempt:	Non-exempt		**Model Impact:**	Remove from 2025, 2030, 2035, 2040, 2050 scenarios	
Project Sponsor:	Louisville Metro	**KIPDA ID:**	1823	**State ID:**	5-8400.00
County:	Jefferson	**Parent ID:**	N/A	**Group ID:**	N/A
Project Name:	McNeely Lake Park Road and Shared Use Path System	**Funding Source:**	State	**Open to Public (OTP) Date:**	2025
Total Estimated Project Cost:	$7,200,000		**Total Cost Programmed in TIP to date:**	~~$7,200,000~~ $0	
Description:	This project will design and construct a new road and shared use path system to connect the north, south, and east sections of McNeely Lake Park. The road will connect Cooper Chapel Road on the north through Quail Chase Golf Course east of McNeely Lake, to Cedar Creek Road (KY 864) on the southeast at the soccer complex and to Mt. Washington Road (KY 2053) on the southwestern portion of McNeely Lake Park. The shared use path system will connect Cooper Chapel Road on the north to the Louisville Loop in McNeely Lake Park on the east and west sides of McNeely Lake, and connect Mt. Washington Road to the Louisville Loop in McNeely Lake Park, and connect the Cooper Farms neighborhood and the Washington Green neighborhood to the McNeely Lake Park shared use paths. Bicycling and pedestrian facilities will be designed and built as a part of this project.				
Justification:	This project will provide new and improved accessible bicycle, pedestrian and vehicular access to and within McNeely Lake Park. McNeely Lake Park is an 847 acre park in south Louisville Metro which has never had internal park connectivity for vehicles, pedestrians, or bicyclists. In order to use the various sections of the park, users would have to drive miles along county roads from the north section to the southeast section and to the southwest section.				
FY 25-28 TIP Funding:	~~*FY 2013 Design (D) phase with State funds:~~ ~~$0 (Federal) + $1,700,000 (State/Local) = $1,700,000 (Total)~~ ~~*FY 2013 Right of Way (ROW) phase with State funds:~~ ~~$0 (Federal) + $300,000 (State/Local) = $300,000 (Total)~~ ~~*FY 2014 Construction (C) phase with State funds:~~ ~~$0 (Federal) + $5,200,000 (State/Local) = $5,200,000 (Total)~~				
*Funds programmed in fiscal years outside of the current 2025-2028 TIP years					

MTP Action:	Remove Project (Replace with US60 - Eastwood to Jefferson Shelby Line Project)				
TIP Action:	N/A				
Exempt/Non Exempt:	Exempt		**Model Impact:**	Remove center turn lane from 2030 scenario for segments without a center turn lane not currently present	
Project Sponsor:	Kentucky Transportation Cabinet (KYTC)	**KIPDA ID:**	3165	**State ID:**	
County:	Jefferson	**Parent ID:**	N/A	**Group ID:**	N/A
Project Name:	US 60 - Long Run Road to Locust Park Place	**Funding Source:**		**Open to Public (OTP) Date:**	2027
Total Estimated Project Cost:	$4,800,000		**Total Cost Programmed in TIP to date:**	$0	
Description:	Improve safety and reduce congestion on US 60 from Long Run Road to Locust Park Place. Project design will evaluate 3-lane widening with a continuous two-way center turn lane and other lower impact alternatives. Design will also consider accommodations for bicyclists, pedestrians, and future transit users.				
Justification:	The Critical Rate for this section of US 60 is 0.53 from years 2012 to 2016. This area is developing with primarily residential uses with commercial nodes. Additional development in this area is expected. US 60 is a regionally significant route linking Louisville to Simpsonville, Shelbyville, and beyond. US 60 provides an alternate east-west route to I 64 and is essential to I 64 incident management.				
FY 25-28 TIP Funding:	N/A				

MTP Action:	Add new project (Replaces KIPDA ID 3165)				
TIP Action:	N/A				
Exempt/Non Exempt:	Non-exempt		**Model Impact:**	Add to 2035, 2040, and 2050 scenarios	
Project Sponsor:	Kentucky Transportation Cabinet (KYTC)	**KIPDA ID:**	NEW	**State ID:**	IP20250034
County:	Jefferson	**Parent ID:**	N/A	**Group ID:**	N/A
Project Name:	US 60 - Eastwood to Jefferson Shelby Line	**Funding Source:**		**Open to Public (OTP) Date:**	2032
Total Estimated Project Cost:	$46,950,000		**Total Cost Programmed in TIP to date:**	$0	
Description:	Improve traffic operations and relieve congestion on US 60 from Eastwood (MP 14.645) to Jefferson/Shelby County Line. Project may consider additional travel lanes and bicycle/pedestrian accommodation.				
Justification:	Major widening of US 60 to extend the five-lane section to near the county line, with the exact limits to be determined based on traffic investigations along that corridor. 2024 Existing Traffic: 11,900-17,200 vpd on US 60 w/signal at LOS B/C during peak hours. 2045 Future Traffic: 17,500-27,000 vpd on US 60 w/signal at LOS F during peak hours. Safety: 88 crashes (1 fatal, 21 injury) during 2018-2022; overlaps 3 LOSS-KAB segments. Geometry: US 60 has two 11-foot thru lanes with 1-foot paved shoulders and one signalized intersection at Flat Rock Road. Steep Class D grade near Long Run Creek.				
FY 25-28 TIP Funding:	N/A				

MTP Action:	Update the OTP				
TIP Action:	Add existing MTP project to the TIP				
Exempt/Non Exempt:	Non-exempt		**Model Impact:**	No change to the model	
Project Sponsor:	Kentucky Transportation Cabinet (KYTC)	**KIPDA ID:**	2606	**State ID:**	5-80006.00
County:	Jefferson	**Parent ID:**	N/A	**Group ID:**	N/A
Project Name:	KY 841 / Renaissance Park	**Funding Source:**	Federal (FED)	**Open to Public (OTP) Date:**	~~2026~~ 2028
Total Estimated Project Cost:	$33,408,000		**Total Cost Programmed in TIP to date:**	~~$15,000,000~~ $17,587,500	
Description:	~~KYTC Highway Plan (June, 2018):~~ Construct new interchange on KY 841 at the Renaissance South Business Park. Project length is 1 mile. CHAF ID: 20190131. Additional Considerations: Construct new interchange on KY 841 at the Renaissance South Business Park.				
Justification:	CHAF Purpose: Relieve negative congestion and safety impacts to the existing transportation infrastructure surrounding the Renaissance South Business Park by improving access and upgrading facilities to current design and safety standards. Supplement future success of the Business Park by providing additional ingress and egress. CHAF Need: Congestion and freight delays along Outer Loop, I-65 and Gene Snyder freeway in the vicinity of and accessing Louisville International Airport, Ford's Louisville Assembly Plant and Renaissance South Business Park (UPS). Limited freight access to Renaissance South Business Park.				
FY 25-28 TIP Funding:	~~*FY18 PE phase with Local funds:~~ ~~$0 (Federal) + $500,000 (State/Local) = $500,000 (Total)~~ ~~*FY20 D phase with Local funds:~~ ~~$0 (Federal) + $2,000,000 (State/Local) = $2,000,000 (Total)~~ ~~*FY21 Construction phase with State funds:~~ ~~$0 (Federal) + $12,500,000 (State/Local) = $12,500,000 (Total)~~ FY26 Construction phase with FED funds: $1,000,000 (Federal) + $250,000 (State/Local) = $1,250,000 (Total) FY27 Construction phase with FED funds: $13,070,000 (Federal) + $3,267,500 (State/Local) = $16,337,500 (Total)				
*Funds programmed in fiscal years outside of the current 2025-2028 TIP years					

MTP Action:	Add to MTP				
TIP Action:	Update description and model and remove Group ID				
Exempt/Non Exempt:	Non-exempt		**Model Impact:**	Add to 2030, 2035, 2040 and 2050 scenarios	
Project Sponsor:	Kentucky Transportation Cabinet (KYTC)	**KIPDA ID:**	3459	**State ID:**	Z various 99-65.22 5-10165
County:	Jefferson	**Parent ID:**	N/A	**Group ID:**	~~2675~~
Project Name:	US 31 Clark Memorial Bridge	**Funding Source:**	Bridge	**Open to Public (OTP) Date:**	2027
Total Estimated Project Cost:	$8,000,000		**Total Cost Programmed in TIP to date:**	$8,000,000	
Description:	~~Bridge Maintenance of the Clark Memorial Bridge US 31 over the Ohio River~~ Repairs and reconfiguration of Clark Memorial Bridge over the Ohio River (Joint Project with Indiana). Project includes a reduction of travel lanes from 4 lanes (2NB and 2SB) to 3 lanes (1SB and 2NB).				
Justification:	To maintain bridge in state of good repair				
FY 25-28 TIP Funding:	FY 2026 Construction phase with Bridge funds: $6,400,000 (Federal) + $1,600,000 (Other) = $8,000,000 (Total)				

PLEASE NOTE - All project updates included in TIP Amendment 2 (MTP 11) and TIP Amendment 3 (MTP 12) were reviewed during the December 15, 2025 IAC meeting. For this reason, the meeting minutes reference both project lists and are included in both packets.

The project updates included in Amendment 2 have no affect on the model. Amendment 3 includes project updates which did have an affect on the mode. The Air Quality Conformity Documentation is included with the Amendment 3 packet only and begins on the next page.

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AIR QUALITY CONFORMITY

At this time, the Louisville, KY-IN transportation planning study area consists of Clark and Floyd counties in Indiana, and Bullitt, Jefferson, Oldham counties, and approximately 4 square miles of Shelby County in Kentucky. Much of the existing planning area coincides with the local ozone nonattainment area. In the past, a portion of the planning study area also coincided with a local fine particulate matter (PM 2.5) nonattainment area, but that standard was revoked in April, 2015. The Louisville, KY-IN maintenance area for the 1997 8-hour ozone standard consisted of Clark and Floyd counties, IN, and Bullitt, Jefferson, and Oldham counties, KY. It was designated as a basic non-attainment area in June, 2004 and redesignated as an attainment area with a maintenance status in July, 2007. The 1997 8-hour ozone standard was revoked for the local area in April, 2015, and at that time, it was not necessary for the local area to determine conformity. (However, the local area was still eligible to receive Congestion Mitigation/Air Quality funding).

In June 2018, the former Louisville, KY-IN 1997 ozone maintenance area was designated as a marginal nonattainment area for the 2015 8-hour ozone standard. Since that time, the monitoring data has indicated that the design value is sufficiently low that the local area can be redesignated as attainment of the 2015 8-hour ozone standard, and the air quality agencies with responsibility for the local area have undertaken steps to do so. The redesignation State Implementation Plan has been submitted to Regions 4 and 5 of US EPA, and the Motor Vehicle Emission Budgets (MVEBs) have been found adequate by Region 5. They are still under review by Region 4. Meanwhile, in January 2023, the Kentucky portion of the local ozone nonattainment area was "bumped up" to a moderate ozone nonattainment area.

KIPDA is amending C*onnecting Kentuckiana 2050*, the metropolitan transportation plan (MTP), and the FY 2025 – FY 2028 Transportation Improvement Program (TIP). This conformity analysis will support conformity determinations by the metropolitan planning organization and the U. S. Department of Transportation agencies for both documents. This analysis is intended to support determinations of conformity under the 1997 and 2015 8-hour ozone standards.

CONFORMITY UNDER THE 1997 and 2015 8-HOUR OZONE STANDARD

When an area such as the Louisville area becomes nonattainment, the area must undertake a process known as conformity. This process provides a linkage between transportation planning and air quality planning. One of the key activities of conformity is to quantify the level of emissions of the air pollutant(s) and/or

precursor(s) for certain analysis years and compare those levels to the motor vehicle emission budgets (MVEBs)—if they exist. The MVEBs limit the amount of a pollutant or precursor that can be emitted. If MVEBs do not exist, the area must rely on interim tests, such as comparing the emissions to the level of emissions in a baseyear, to determine conformity. The baseyear would be set by US EPA when the standard is promulgated.

When the local area was designated as nonattainment of the 2015 8-hour ozone standard, the air quality agencies with responsibility for the local area were charged with the additional responsibility to develop a set of actions that could be taken to reduce pollutant/precursor emissions. These actions were to be included in air quality plans known as State Implementation Plans (SIPs). Since the Louisville nonattainment area is a bi-state area, these sets of actions to reduce precursor emissions were to be incorporated into both the Indiana and Kentucky SIPs. It was during this process that MVEBs were established. Subsequent to the local area being designated as a nonattainment area but before the SIPs were completed, the data from the air quality monitors in the area indicated that the 2015 8-hour ozone standard had been met. With this data in hand, the air quality agencies were each able to submit a SIP known as a redesignation request. The establishment of the MVEBs was one of the components of the redesignation request. Since the SIPs were redesignation requests for ozone, the MVEBs were established for the precursors of ozone -- volatile organic compounds and oxides of Nitrogen.

Because the redesignation requests by the air quality agencies in Indiana and Kentucky are in different states of approval, it is necessary to use different emission budgets to determine whether each set of counties has passed conformity. Since Region 5 of US EPA has approved Indiana's redesignation request, the allowed emissions for the 2019 base year and the 2035 emission budgets for the 2015 Ozone standard are used for the Indiana counties of Clark and Floyd. Since Region 4 of US EPA has not yet approved Kentucky's redesignation request, the 2020 emission budgets for the 1997 Ozone standard are used for the Kentucky counties of Bullitt, Jefferson, and Oldham.

CONSULTATION FOR *CONNECTING KENTUCKIANA 2050*

The first step in determining conformity of *Connecting Kentuckiana 2050 was* to consult with the interagency consultation (IAC) group concerning matters not explicitly determined by the conformity rule. Conformity under the 1997 and 2015 8-hour ozone standards have been previously determined. Therefore, many of the issues normally arising in conformity had undergone consultation previously when the local area was a nonattainment or maintenance area under the 1997 8-hour

ozone standard or during the previous conformity process for *Connecting Kentuckiana 2050*.

The IAC meeting was held as a video conference on December 15, 2025 at 10:00 AM EST. A summary of the meeting follows.

Participants:

EPA – Simone Jarvis, Sunday Gotvald, Tony Maietta
FHWA – Tonya Higdon, Paige Story
KYTC – Tom Hall, Isidro Delgado, Larry Chaney
INDOT – Gabrielle Herin, Jay Mitchell
LMAPCD – Flannery O'Neil, Rachel Hamilton
KYDAQ – Claire Oyler, Kevin Davis
IDEM – Shawn Seals
TARC – Robert Monsma
KIPDA – Brady Hill, Chris Nicolas, Eronmonsele Esekhaigbe, Randy Simon, Elijah Beliles, Andy Rush

Welcome/Roll Call:
A total of 22 participants, representing nine local, state, regional, and federal agencies participated in the IAC Conference Call for Amendments 11 and 12 of KIPDA's *Connecting Kentuckiana 2050* Metropolitan Transportation Plan (MTP) cross listed as Amendments 2 and 3 of the *FY 2025-2028 Transportation Improvement Program* (TIP). Andy Rush started the meeting at 10:00am and took the roll. Chris Nicolas reviewed the keys steps and schedule for these amendments.

Project Discussion:
Chris Nicolas began to review the list of projects slated for Amendment 2. Ms. Nicolas explained what changes are being proposed for each project and why each project adjustment was considered by KIPDA staff to be classified as an "exempt" or "non-exempt" project in terms of air quality. Ms. Nicolas noted a typo for the project name of DES 2500051. This typo was fixed in the meeting by Ms. Nicolas. After explaining all of the Indiana projects in Amendment 2, Ms. Nicolas asked for questions from the group. No questions were raised by the group. Ms. Nicolas then began to review the Kentucky projects listed in Amendment 2. Simone Jarvis notes that there are three projects in the draft missing the "Exempt/Nonexempt" box, and the "Model Impact" boxes. Mr. Rush clarified the status of these projects, and Ms. Nicolas committed to fixing those typos. Ms. Nicolas continued to review Kentucky projects listed in Amendment 2 without comment from the group. The group agreed that none of the projects listed in Amendment 2 should have any effect on the model.

Ms. Nicolas began to review the projects listed in Amendment 3—all of which will require air quality model analysis and federal review. Isidro Delgado stated that the "joint project with Indiana" portion of the description of KIPDA ID 3459 may need to be removed. KYTC will need to confirm. Mr. Rush asked if this project is intended to have one lane southbound and two lanes northbound. Tom Hall confirmed that the project intends to have one southbound lane and two northbound lanes. Paige Story and Tonya Higdon committed to reaching out to find out if this project is a joint project with Kentucky and Indiana or just a Kentucky project. Ms. Higdon asked if this project was added later to the list of projects. Ms. Nicolas confirmed that this project update was submitted just before the meeting and added to be reviewed with the Amendment 3 packet to avoid waiting until for future amendment.

Ms. Nicolas then continued to review the remaining projects on the Amendment 3 list with additional clarification provided by Mr. Rush and Eronmonsele Esekhaigbe.

Randy Simon reviewed the potential need to create a new 2027 model analysis year. Ms. Jarvis could not confirm if EPA agreed with KIPDA staff's interpretation of previous federal guidance. However, she did commit to obtaining a response from EPA headquarters to answer the questions posed by KIPDA staff regarding the need for a 2027 model year. Mr. Simon continued to discuss questions KIPDA had regarding model analysis years and how to potentially incorporate adjusted reformulated gasoline requirements. Ms. Jarvis recommended that KIPDA not incorporate gasoline adjustments until the EPA makes these adjustments officially take effect. Tony Maietta stated that EPA region 5 is also working to potentially adjust gasoline requirements in the future. Rachel Hamilton stated that EPA region 4's request regarding reformulated gasoline is still under review. KIPDA staff will await further information regarding their questions to EPA.

Tonya Higdon stated that the Clark Memorial Bridge is 100% owned and maintained by the state of Kentucky. Ms. Higdon asked for additional confirmation to be provided after the meeting of the IAC group members regarding the lane adjustments planned for Clark Memorial Bridge.

Meeting adjourned at 10:56am.

ESTABLISHED PRACTICE

In addition to the issues discussed during consultation, there were several issues which were not explicitly discussed or received little discussion during the video conference consultation, but which had impacts on the analysis. Many of these issues have been discussed during previous consultations. These issues were handled in a manner consistent with the previous established practice. The more prominent issues are discussed below.

Relationship of MTP and TIP for Conformity Purposes

The Transportation Improvement Program (TIP) is maintained as a subset of the Metropolitan Transportation Plan (MTP). Therefore, the conformity determination for the MTP will serve as the conformity determination for the TIP.

Conclusion: The IAC members are informed of this from time to time in order to clarify that the conformity determination for the MTP also serves as the conformity determination for the TIP.

Vehicle Registration (Fleet Mix) Data

At various times in the past, new vehicle registration data has been provided for use in developing pollutant emissions. This vehicle registration data has been reviewed and accepted by the IAC. The data being used for the Indiana counties has been updated to 2022, and the data being used for the Kentucky counties has been previously updated to 2023. These data represent the most recent information available for this issue.

Conclusion: Based on a consensus of the IAC members, vehicle registration data for 2022 for the Indiana counties and for 2023 for the Kentucky counties is now being used in developing emission estimates.

CONFORMITY OF *CONNECTING KENTUCKIANA 2050*

The MTP, *Connecting Kentuckiana 2050*, was examined to determine if it met the requirements of the conformity rule under the 1997 and 2015 8-hour ozone standards. In general, the process leading to a conformity determination has two major components:

(1) a regional emissions (air quality) analysis to determine that air pollutant emissions do not exceed the budgets set in the SIPs, if applicable, or the emission levels for a given base year; and
(2) a monitoring of the progress in implementation of the Transportation Control Measures (TCMs) contained in the SIPs.

In the past, consultation with the state and local air quality agencies and EPA had determined that there are no approved TCMs in the SIPs of Indiana and Kentucky. Therefore, it is possible to show conformity of *Connecting Kentuckiana 2050* simply by determining that the air pollutant emissions do not exceed the budgets in the SIPs or the base year emissions.

ANALYSIS PROCESS

The process of calculating the regional emissions for *Connecting Kentuckiana 2050* involved three main procedures. The first procedure was a review of the projects to determine which projects needed to be included in the regional emissions analysis. The second procedure was to perform the calculations necessary to quantify certain measures of travel behavior. The third procedure was to calculate the pollutant / precursor emissions. These activities are discussed below in greater detail.

Project Review

The first procedure was to review the projects to determine which projects were exempt or non-exempt and which projects were "regionally significant." The combination of these two considerations was the basis for determining which projects were recommended for inclusion in the regional emissions analysis. As part of the process of developing amendment 12 of the MTP, *Connecting Kentuckiana 2050*, a group of projects had been proposed for the amendment of the plan. These projects were reviewed by KIPDA staff, who prepared a list of the projects with information about the projects and a staff recommendation concerning the project's status relative to its being included in the regional emissions analysis. There is usually a straightforward explanation for why projects are included in or excluded from the analysis and why they are analyzed as they are. Most of the projects which were excluded were exempt projects as defined in the Code of Federal Regulations in 40 CFR 93.126 and 40 CFR 93.127.

During consultation, this list was reviewed and accepted by the IAC as described under the section entitled "CONSULTATION FOR *CONNECTING KENTUCKIANA 2050*." (Please see above.) The projects in *Connecting Kentuckiana 2050* were analyzed as indicated on the list provided to IAC.

In the past, there were several projects which could not be analyzed using the travel model but were not explicitly exempt. Most of these projects had been evaluated using spreadsheet methods using emission factors (rates). Since the MOVES emissions model was being used in the inventory mode, emission factors were not available for this analysis. However, experience had shown that the emission impacts for these projects were always small and positive (i.e., emission reducing).

Therefore, it is reasonable to predict that the emission impacts of these projects—if they could be quantified—would decrease the emissions shown in the tables at the end of this document.

Calculation of Travel-Related Information

The analysis of the travel behavior impacts for the nonattainment area primarily involved using the KIPDA travel demand forecasting model to determine measures of travel such as vehicle-miles-traveled (VMT) and speed. The method for determining these measures was to input the appropriate roadway and transit information into the model and to run the model using the appropriate socioeconomic information for a given analysis year. This analysis is explained below in further detail in the sections concerning the KIPDA travel demand forecasting model and adjustment factors for travel model output.

KIPDA Travel Demand Forecasting Model

The KIPDA travel demand forecasting model is a mathematical model which relates travel to the transportation system and basic socioeconomic information. The domain of the model is a study area which includes the Louisville (KY-IN) Metropolitan Planning Area. The Louisville (KY-IN) Metropolitan Planning Area presently consists of Clark and Floyd counties in Indiana, and Bullitt, Jefferson, and Oldham counties and approximately 4 square miles in Shelby County in Kentucky. This area is divided into 984 smaller units called traffic analysis zones.

As previously mentioned, the KIPDA regional travel demand forecasting model was updated and calibrated in 2022. This update established 2019 as the ~~new~~ base year for the model. The model update utilized the information incorporated into the travel model during previous updates. In addition, a significant amount of data from Streetlight Data, Inc. was incorporated into the updated model, particularly for trips which crossed the external boundary of the model. During the update, the model parameters were adjusted such that the model output matched—within reason—two main calibration criteria based on measured data. These criteria were: (1) the total daily VMT for all highway facilities except local roads for the region; and (2) highway traffic volumes crossing the Ohio River screenline. The result of the update was a travel model which generally replicated travel in the Louisville area for 2019. The updated travel model was used in the regional emissions analysis.

The KIPDA travel demand forecasting model uses the standard four steps of modeling: trip generation, trip distribution, mode choice, and trip assignment. In addition, it considers travel by vehicles entering, leaving, and crossing the study area. These types of trips are known as external-internal, internal-external, and external-external, respectively. The internal ends of these trips are determined by

the methods described below for internal-internal travel. The external ends are determined from the volume of traffic crossing the study area boundary at any of the 46 external stations.

Trip generation is the process of determining the number of unlinked trip ends--called productions and attractions--and their spatial distribution based on socioeconomic variables such as households and employment. The trip rates used to define these relationships were derived from the travel data collection efforts described above. This information was supplemented by use of the *National Cooperative Highway Research Program Report #365* and the Institute of Transportation Engineers' *Trip Generation Report*. The KIPDA travel demand model uses three internal-internal trip purposes. Internal-internal trips are those which have both ends inside the modeling domain. The three purposes are home-based work, home-based other, and non-home-based. The set of trip rates is one of the calibration parameters of the model.

Trip distribution is the process of linking the trip ends thereby creating trips which traverse the area. The KIPDA travel model uses a gravity model to link all trips except the external-external ones. The gravity model is based on the principle that productions are linked to attractions as a direct function of the number of attractions of a zone and as an inverse function of the travel time between zones. This inverse function of travel time is used to generate parameters called friction factors which, in turn, direct the gravity model. In addition, information from a study which investigated the behavior of travelers crossing the Ohio River and traffic count information from years near 2019 were utilized to develop additional parameters called K-factors. The K-factors are used by the model to ensure that it is predicting the correct volume of traffic crossing the Ohio River. Friction factors and K-factors are two of the calibration parameters of the model.

Mode choice is the process used to separate the trips which use transit from those which use automobiles. It is also used to separate the auto drive-alone trips from auto shared-ride trips. In some previous KIPDA travel demand models, mode choice was based primarily on information provided by the *TARC Travel Forecasting Study* from some time ago. In that model, the user's benefit or utility was calculated for each mode based on zonal socioeconomic characteristics and the cost and time of the trip using the various modes. A nested logit model was used to determine the probability of the trip being made by each of the modes. This probability was then multiplied by the number of trips between zones to determine the number of trips by each mode.

As previously stated, the conformity analysis for *Connecting Kentuckiana 2050* utilizes transit information from previous travel demand models. The results of the 2004 TARC on-board survey had been used to factor the data in the previous transit

files. This was deemed acceptable for several reasons. The primary reason was that the transit network envisioned by *Connecting Kentuckiana 2050* is essentially the same as the existing one. In addition, the number of total trips from the two models was similar. Therefore, the use of the factored transit trip information from previous travel models did not significantly change the proportion of trips allocated to transit. Finally, the proportion of trips utilizing transit is less than 2% of the total trips. So small differences in the number of transit trips should provide a negligible effect on overall travel.

Trip assignment is the process used to determine which links of the network a given trip will use. There are several assignment schemes which may be used. Two of the more common schemes are All-or-Nothing (AON)--in which all trips between two zones follow the shortest time path--and Stochastic--in which trips between two zones may be assigned to several paths based on their relative impedances or travel times. It is not uncommon for travel models to use several assignment schemes in sequence to converge to a better assignment. A sequence commonly used involves using several AONs with the traffic volumes reported at the end of each scheme being a weighted average of the volumes from the most recent scheme and the volumes from the previous schemes. A capacity restraint provision is used to adjust travel times between assignment schemes. This sequence is called an equilibrium assignment. The KIPDA travel model uses an equilibrium assignment which converges when the change in system-wide travel time over successive iterations is estimated to be within 0.0001 or less.

Tolls are being used as a means of providing for a portion of the cost of the Louisville Southern Indiana Ohio River Bridges project. To reflect the effect of the tolls in the KIPDA travel model, time penalties have been used in the model on the bridges where tolls are being collected. As mentioned above, the toll structure was recently changed. To reflect this in the travel model update, the time penalties used in the KIPDA travel model were likewise changed to reflect the effect of the new toll structure. The time penalties also reflect some travel effects which could not otherwise be quantified.

The output from the KIPDA travel model is in the form of a series of links with each link having certain associated data such as number of lanes, capacity, facility type, area type, functional class, and volume. This data allows for the calculation of other link information such as vehicle-miles-traveled (VMT). The VMT can be calculated as the product of the volume of traffic using a link times the distance (length) of the link.

<u>Adjustment Factors for Travel Model Output</u>

The VMT and speeds from the travel demand model were adjusted before being used in the calculation of regional emissions. The purpose of these adjustments

was to reconcile the model output with travel estimates from other sources, such as the Highway Performance Monitoring System (HPMS) estimates of VMT. To perform this adjustment, factors were developed for the baseyear of the model using HPMS or other estimates and applied to model output for other years.

The development of the VMT adjustment factors involved comparing the VMT outputs of the travel demand model to the HPMS VMT estimates for 2019. Factors were developed to adjust the model output to account for variation between the model and HPMS within each of the counties. To do this, the VMT from the 2019 model run was tabulated by county and functional classification. The VMT estimates derived from the model were then compared to the HPMS VMT estimates for 2019 to develop adjustment factors to be applied to the model output for subsequent years. The 8-hour ozone analysis is based on a level of traffic and the accompanying emissions expected on a typical summer weekday. For that analysis, the adjustment factors were increased by 2.9% to reflect the higher volume of traffic that can be expected on a typical summer weekday relative to the annual average daily traffic. The adjustment factors for VMT were developed on a functional classification basis for each county.

The development of the speed adjustment factors involved a similar process. The outputs of the travel demand model were compared to estimates of speed based on the equations of the Highway Economic Reporting System (HERS).

In general, the HERS equations were used to estimate speeds for five functional classifications of urban roadways and for five functional classifications of rural roadways. The speeds from these roadway sections were used to determine the average speed for each of five rural and urban functional classes. The speeds used in the travel model were also averaged for each of the five rural and urban functional classes for which HERS estimates had been developed. The speed adjustment factor for each of these functional classes was calculated as the ratio of the average speed using the HERS equations to the average speed using the travel model data. In some cases, the adjustment factors for some functional classes for some counties had to be based on the combined effects of the functional classes due to the sparseness of data for one or more of the functional classes.

The procedures described above produced speed adjustment factors for all functional classes except rural and urban local roads and ramps. (Ramps are not officially a separate functional class, but the speed behavior of traffic on ramps is not expected to be like that of any other functional class. Therefore, the ramps were treated as a separate "functional class".) There was not sufficient data to estimate speeds for the roadways of these classes. For rural and urban local roads and ramps, the speeds in the travel model were used without adjustment (i.e., the speed adjustment factor for rural and urban local roads and for ramps = 1).

Calculation of Pollutant/Precursor Emissions

The calculation of the pollutant/precursor emissions for the nonattainment area involved using the adjusted output data from the KIPDA travel demand forecasting model as input to the MOVES model. KIPDA staff developed travel model output data in the form of vehicle-miles-traveled (VMT) in three formats:~~,~~ (1) VMT by speed bin by MOBILE 6 facility type (road type) for each county, (2) VMT fractions by speed bin by county by MOBILE 6 facility type (road type) for each county, and (3) VMT and average speed by functional class for each county. KIPDA staff utilized this data along with other necessary inputs to run the MOVES model and develop emission estimates for volatile organic compounds (VOCs) and oxides of Nitrogen (NOx).

MOVES Emissions Model

As previously mentioned, the Louisville region is a nonattainment/maintenance area for the pollutant ozone and must therefore control the precursors of ozone, VOCs and NOx. The emission estimates for VOCs and NOx were determined using the MOVES4 emissions model. KIPDA staff produced the emissions for all of the counties in the nonattainment/ maintenance area. The methodology used in calculating these emission estimates is discussed below.

There are a number of factors affecting the emission estimates developed from the MOVES model. In the past, these factors included the presence of inspection/ maintenance (I/M) programs in some of the counties. During that time period, the VMT generated in Clark, Floyd, and Jefferson (KY) counties came from some vehicles subject to an I/M program and from some vehicles not subject to an I/M program. The I/M program in Clark and Floyd counties was discontinued at the end of 2006. The I/M program in Jefferson County (KY) was discontinued in 2003. Therefore, these programs are no longer a factor in estimating emissions.

One of the other factors is the fuel used by the vehicles in the various counties. The fuels which are used in Clark, Floyd, and Jefferson counties include reduced Reid vapor pressure gasoline (RVP) and reformulated gasoline (RFG). While RFG is used in some portions of Bullitt and Oldham counties, unregulated gasoline is used in the other portions of those counties as well as the areas adjacent to the nonattainment area. Vehicles from these other areas can be expected to travel in the Clark, Floyd, and Jefferson (KY) counties also. In the past, the emission factors (from the MOBILE 6 model) for Clark, Floyd, and Jefferson (KY) counties used in the air quality analysis varied by county because they represent a VMT-weighted composite based on an estimate of travel in each county by vehicles from the various portions of the region. For this analysis, the MOVES model was used in what is known as the inventory mode. Using the inventory mode, it is possible to define the fuel characteristics and the presence of an I/M program for each county, but it is not possible to represent the effect of travel in a county by vehicles from other counties. Therefore, the use of

composite emission factors was not possible. Other than that, the assumptions used in the analysis were consistent with those of the appropriate air quality agency for each of the counties. For Clark and Floyd counties, the assumptions of the Indiana Department of Environmental Management (IDEM) were used. Some assumptions of LMAPCD were also used for Clark and Floyd counties. For Jefferson County (KY), the assumptions of the LMAPCD were used. These assumptions had been previously reviewed and accepted by the IAC partners.

The assumptions used in developing the emissions for Clark, Floyd, and Jefferson (KY) counties were the same as those used in developing the ozone budgets update (for VOCs and NOx) for the recent redesignation request in 2022. These assumptions included some changes which were incorporated in recent years prior to 2022. The changes which affected the VOC and NOx emissions included:

(1) improved consistency and completeness of gasoline data provided with the new MOVES model,
(2) the incorporation of newer vehicle registration data (for 2022) for Clark and Floyd counties (provided by INDOT), and
(3) improvements in internal model calculations to account for emission controls, driving profiles and engine characteristics.

The emissions for Bullitt and Oldham counties were also developed by KIPDA staff. As with the other counties, the assumptions for these counties were consistent with those used in the redesignation request developed in 2022. Most of the inputs to the MOVES model were defaults and/or data used that was consistent with previous SIPs or data updated for the redesignation request. As mentioned above, RFG is used in some portions (the "original" portions) of Bullitt and Oldham counties, and unregulated gasoline is used in the other portions (the "new" portions) of those counties as well as the areas adjacent to the nonattainment area. The "original" portions and "new" portions refer to whether a portion of these counties had originally designated as a nonattainment/maintenance status for the 1-hour ozone standard (used in the 1990's) or had only been designated under the 1997 8-hour ozone standard. Neither portion of either county had an I/M program. So, it was not necessary to have I/M input information for MOVES. However, it was possible that the gasoline formulation in the different portions of these counties could be different.

It was determined—based on data provided by US EPA for the MOVES model—that the gasoline formulation for Bullitt and Oldham counties is essentially the same as that for Jefferson County with respect to the use of RFG. Since the use of the MOVES model in the inventory mode does not allow for the characteristics of different blends of gasoline within the same county, the gasoline formulations of Bullitt and Oldham counties were modeled the same as for Jefferson County.

The assumptions used for Bullitt and Oldham counties were consistent with those for the ozone budgets update for the recent redesignation request in 2022. The changes which affected the VOC and NOx emissions included:
(1) improved consistency and completeness of gasoline data provided with the new MOVES model,
(2) the characterization of gasolines described in the previous paragraph, and
(3) improvements in internal model calculations to account for emission controls, driving profiles and engine characteristics.

KIPDA staff developed emission estimates of VOCs and NOx using the MOVES model. To review, the following steps were undertaken.
(1) KIPDA staff received developed the adjusted travel model output in the forms of VMT and average speed, VMT by speed bin, and VMT fractions by speed bin, all by county and by MOBILE facility type by analysis year, as described above.
(2) KIPDA reformatted the data to prepare it as input to the MOVES model. Other necessary data was received from LMAPCD.
(3) The MOVES model was run in inventory mode to determine emission estimates of each precursor for each county for each analysis year.

RESULTS OF THE ANALYSIS

The transportation plan, *Connecting Kentuckiana 2050,* has been examined to determine if it is in conformity with the SIPs of Indiana and Kentucky and fulfills the criteria in the federal conformity rule (found in 40 CFR 93). The examination has been based on an air quality analysis to determine that air pollutant emissions of the appropriate areas did not exceed the VOC and NOx motor vehicle emission budgets.

As previously mentioned, the other criterion for determining conformity would have been the progress in implementation of the Transportation Control Measures (TCMs) contained in the SIPs. However, since previous consultation had determined that there were no approved TCMs, that criterion did not affect the determination of conformity. The results of the regional emissions analyses for ozone precursors are discussed below.

8-hour Ozone Analysis

The eight-hour ozone redesignation SIPs of Indiana and Kentucky contain emission budgets for the precursors of ozone, volatile organic compounds (VOCs) and oxides of Nitrogen (NOx). The regional emissions analysis was conducted to provide estimates of the levels of emissions of VOCs and NOx for the various analysis years. These emission levels were then compared to the budgets in the SIPs to determine if the conformity tests were passed.

The results of the regional emissions analysis are summarized in Tables 1, 2, and 3. Table 1 shows the summer weekday vehicle-miles-traveled from the analysis. Table 2 shows that for 2025 and 2030, the summer weekday VOC and NOx emission levels for the 2015 8-hour nonattainment area are less than the 2019 base year emissions in the 2015 8-hour ozone redesignation SIP. Table 2 also shows that for 2035, 2040, and 2050, the summer weekday VOC and NOx emission levels for the 2015 8-hour nonattainment area are less than the motor vehicle emission budgets established in the 2015 8-hour ozone redesignation SIP. Table 2 also shows that for 2035, 2040, and 2050, the summer weekday VOC and NOx emission levels for the 2015 8-hour nonattainment area are less than the 2035 motor vehicle emission budgets established in the 2015 8-hour ozone redesignation SIP. Table 3 shows that for 2025, 2030, 2035, 2040, and 2050, the summer weekday VOC and NOx emission levels for the 2015 8-hour nonattainment area are less than 2020 emission budgets in the 1997 8-hour ozone redesignation SIP.

Conclusions – 8-hour Ozone

The regional emissions analysis of *Connecting Kentuckiana 2050* indicates that the Metropolitan Transportation Plan is consistent with the goals and emission budgets established in the State Implementation Plans of Indiana and Kentucky. The cumulative effect of the results shown in Tables 2 and 3 indicates that *Connecting Kentuckiana 2050* has met the requirements of conformity under the 2015 8-hour ozone standards. In summary, it can be concluded that *Connecting Kentuckiana 2050* conforms to the SIPs and meets the requirements of the federal conformity rule.

TABLE 1

SUMMER WEEKDAY VEHICLE-MILES-TRAVELED (VMT) ESTIMATED FOR THE 8-HOUR OZONE NONATTAINMENT AREA (in 1000's of vmt/day)			
YEAR	**INDIANA**	**KENTUCKY**	**TOTAL**
2025	**8072**	**26510**	**34582**
2030	**8486**	**27941**	**36427**
2035	**8908**	**29269**	**38177**
2040	**9047**	**30478**	**39525**
2050	**10220**	**32468**	**42688**

TABLE 2

SUMMER WEEKDAY EMISSIONS FOR THE 8-HOUR NONATTAINMENT AREA (kg/day)				
EMISSION LEVELS FOR VARIOUS YEARS				
YEAR	**Area**	**VOCs**	**NOx**	**PASS**
2025	**Regional**	**7958**	**15578**	**YES**
2030		**5735**	**9903**	**YES**
2035		**4615**	**6517**	**YES**
2040		**3889**	**5143**	**YES**
2050		**3134**	**4265**	**YES**

NOTE: The criteria for conformity for the INDIANA counties are as follows:

2025 and 2030 Regional emission levels for VOCs must be below the 2015 Ozone standard redesignation SIP base year (2019) emissions of 13.65 tons/day or 12,383 kg/day.

2025 and 2030 Regional emission levels for NOx must be below the 2015 Ozone standard redesignation SIP base year (2019) emissions of 33.03 tons/day or 29,964 kg/day.

2035, 2040, and 2050 Regional emission levels for VOCs must be below the 2015 Ozone standard redesignation SIP emission budget (2035) of 5.51 tons/day or 4,999 kg/day.

2035, 2040, and 2050 Regional emission levels for NOx must be below the 2015 Ozone standard redesignation SIP emission budget (2035) of 17.18 tons/day or 15,585 kg/day.

TABLE 3

SUMMER WEEKDAY EMISSIONS FOR THE 8-HOUR NONATTAINMENT AREA (kg/day)				
EMISSION LEVELS FOR VARIOUS YEARS				
YEAR	**Area**	**VOCs**	**NOx**	**PASS**
2025	**Regional**	**7958**	**15578**	**YES**
2030		**5735**	**9903**	**YES**
2035		**4615**	**6517**	**YES**
2040		**3889**	**5143**	**YES**
2050		**3134**	**4265**	**YES**

NOTE: The criteria for conformity for the KENTUCKY counties are as follows:

2025, 2030, 2035, 2040, and 2050 Regional emission levels for VOCs must be below the 1997 Ozone standard redesignation SIP emission budget (2020) of 22.92 tons/day or 20,793 kg/day.

2025, 2030, 2035, 2040, and 2050 Regional emission levels for NOx must be below the 1997 Ozone standard redesignation SIP emission budget (2020) of 29.46 tons/day or 26,726 kg/day.